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cont.

16. (Amended) A head substrate according to any of claims 2, 3, and 5, wherein said external connection terminals, said recording execution means, said data memory means, said memory access means and said common terminal wiring means are constituted by films formed on one base substrate.

17. (Amended) A printing head detachably mounted on a printer main body, comprising a head substrate according to any of claims 1, 2, 3, and 5:

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30. (Amended) A printing apparatus according to claim 29, wherein the recording is executed by discharging ink by the heat of said heat generating element.

REMARKS

This application has been reviewed in light of the Office Action dated August 13, 2001. Claims 1-3, 5, 7, and 9-30 are presented for examination. Claims 4, 6, 8, and 31-67 have been canceled, without prejudice or disclaimer of the subject matter presented therein. Claims 3, 5, 7, 9-11, 13-17, and 30 have been amended to define more clearly what Applicants regard as their invention. Claims 1 and 21 are in independent form. Favorable reconsideration is requested.

A Claim To Priority and certified copies of the priority documents for this application were filed on April 3, 2000. Applicants respectfully request acknowledgment of the claim for foreign priority and the receipt of the certified copies.

Information Disclosure Statements and corresponding PTO-1449 forms were filed on December 18, 2000 and April 10, 2001. Applicants respectfully request the

Examiner to return initialed copies of the PTO-1449 forms, indicating the references cited thereon have been considered.

Claims 1-67 were rejected under 35 U.S.C. § 112, second paragraph, as indefinite.

First, cancellation of Claims 4, 6, 8, and 31-67 renders the rejections of those claims moot.

The claims have been carefully reviewed and amended as deemed necessary to ensure that they conform fully to the requirements of Section 112, second paragraph, with special attention to the point raised in the Office Action regarding multiplicity. Specifically, to reduce the number of claims, Claims 31-67 have been canceled and will be pursued in a divisional application. In addition, Claims 4, 6, and 8 have been canceled and the number of multiple dependencies in the remaining claims has been reduced.

It is believed that the rejection under Section 112, second paragraph, has been obviated, and its withdrawal is therefore respectfully requested.

In view of the foregoing amendments and remarks, Applicants respectfully request favorable reconsideration and early passage to issue of the present application.

Applicants' undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our below listed address.

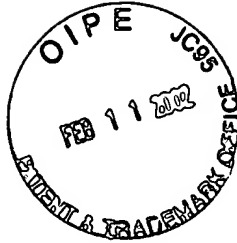
Respectfully submitted,

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Application No.09/426,896
Attorney Docket No. 03500.013949

VERSION WITH MARKINGS TO SHOW CHANGES MADE TO CLAIMS

3. (Amended) A head substrate according to claim 2, wherein:

said recording execution means is adapted for executing the recording operation based on the recording image signal serially entered into one of said external connection terminals; and said common terminal wiring means [is adapted for serially supplying] allows at least one of the input of data into said memory access means and the output of data from said memory access means, using [with the input signal to] the same external connection terminal that [receives the serial input of] serially inputs the recording image signal[, as writing data].

5. (Amended) A head substrate according to claim 2, wherein:

said recording execution means is adapted for executing the recording operation based on the recording image signal parallel entered into plurality of said external connection terminals; and

said common terminal wiring means [is adapted for parallel supplying to] allows at least one of the parallel input of data into said memory access means and the parallel output of data from said memory access means, using the same external connection terminal that parallelly inputs [an input signal to said plural external connection terminals that receive the parallel input of] the recording image signal[, as writing data].

7. (Amended) A head substrate according to [any of] claims 2 [to 6] or 3,

wherein:

said recording execution means includes a shift register which is reset by a reset signal externally entered into one of said external connection terminals and is adapted to temporarily hold and parallel output, at a timing corresponding to the clock signal, the recording image signal serially entered into another of said external connection terminals; and said common terminal wiring means is adapted for supplying said memory access means with the reset signal for said shift register, as said binary logic signal constituting said access permission signal.

9. (Amended) A head substrate according to [any of] claims 2 [to 6] or 3,

wherein:

said recording execution means includes a shift register which is adapted to be reset by a reset signal externally entered into one of said external connection terminals and then to temporarily hold and parallel output, at a timing corresponding to the clock signal, the recording image signal serially entered into another of said external connection terminals, and a latch circuit which is adapted to be reset by said reset signal and then to temporarily hold and output the recording image signal parallel outputted from said shift register; and

said common terminal wiring means is adapted for supplying said memory access means with said reset signal as said binary logic signal constituting said access permission signal.

10. (Amended) A head substrate according to [any of] claims 2 [to 6] or 3,

wherein:

said recording execution means includes a shift register which is adapted to be reset by a reset signal externally entered into one of said external connection terminals and then to temporarily hold and parallel output, at a timing corresponding to the clock signal, the recording image signal serially entered into another of said external connection terminals, and a latch circuit which is adapted to temporarily hold and output the recording image signal parallel outputted from said shift register at a timing corresponding to a latch signal externally entered into still another of said external connection terminals; and

said common terminal wiring means is adapted for supplying said memory access means with said latch signal as said binary logic signal constituting said access permission signal.

11. (Amended) A head substrate according to any of claims [1 to 6] 1, 2, 3, and 5, wherein said recording execution means includes plural recording elements for recording the recording image signal parallel outputted from said latch circuit, corresponding to a recording pulse signal externally entered into one of said external connection terminals.

13. (Amended) A head substrate according to any of claims [2 to 6] 2, 3, and 5, wherein said common terminal wiring means is adapted to supply said memory access means with the clock signal for said recording image signal, as a memory clock signal.

14. (Amended) A head substrate according to any of claims [2 to 6] 2, 3, and

5, wherein:

said data memory means is means for executing both data writing and data readout as the memory access;

said memory access means is means for selectively executing either of data writing into and data readout from said data memory means corresponding to an externally entered mode switching signal; and

said common terminal wiring means is adapted for supplying said memory access means with the input signal to one of said external connection terminals as the mode switching signal.

15. (Amended) A head substrate according to any of claims [2 to 6] 2, 3, and

5, wherein:

said recording execution means is adapted for receiving a driving electric power externally entered from one of said external connection terminals; and

said common terminal wiring means is adapted for supplying said memory access means with the driving electric power for said recording execution means.

16. (Amended) A head substrate according to any of claims [2 to 6] 2, 3, and

5, wherein said external connection terminals, said recording execution means, said data memory means, said memory access means and said common terminal wiring means are constituted by films formed on one base substrate.

17. (Amended) A printing head detachably mounted on a printer main body, comprising a head substrate according to any of claims [1 to 6] 1, 2, 3, and 5.

30. (Amended) A printing apparatus according to claim 29, wherein the recording is executed by discharging ink by the [hat] heat of said heat generating element.

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